

Method of testing bonded connections, and a wire bonder

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CLAIMS

- 10 1. Method of testing wire-bond connections between a bonding wire and a separate surface, which are produced by a bonding head with a bonding tool and a wire clamp associated with the bonding tool, under pressure and the action of ultrasound and/or heat, characterized in that after the bonded connection has been
- 15 created, the bonding head or the bonding tool is lifted a short distance away from the bonding site, the bonding wire is fixedly gripped by the wire clamp, and the bonding head or the wire clamp with bonding wire gripped therein is raised for a second distance, during
- 20 which process the tensile force acting on the bonding wire is detected.
2. Testing method according to Claim 1, characterized in that the bonding head or the wire clamp is raised for a second distance calculated, in dependence on
- 25 the structural features, so that a predetermined tensile force is exerted as a result of the raising, and an intact state of the bonded connection is detected during raising.
3. Testing method according to Claim 2,
- 30 characterized in that the intactness of the bonded connection is determined by observing the time course of the tensile force acting on the wire clamp during the raising.

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4. Wire bonder in which there is integrated into a bonding head a testing arrangement for wire-bond connections between a bonding wire and a separate surface, in particular a bonding pad.
- 5 5. Wire bonder according to Claim 4, with a bonding head that comprises a tool or transducer holder to hold a bonding tool and a wire-clamp holder to hold a wire clamp for gripping a bonding wire, as well as a drive mechanism for the vertical displacement of the bonding head or tool holder and wire-clamp holder,
- 10 characterized in that a program control system to control a predetermined movement sequence of the bonding head or tool holder and wire-clamp holder is associated with the drive mechanism in order to carry out a measurement of tensile force at the bonding wire, and a force-measuring device is
- 15 associated with the wire-clamp holder in order to measure a tensile force acting on a bonded connection to the bonding wire that has been produced.
6. Wire bonder according to Claim 5,
- 20 characterized in that the wire-clamp holder is mounted on the bonding head so that it can be elastically deflected or linearly displaced against the action of a pretensioning element, and a force-measurement element, in particular a strain gauge, is associated with the holder.
- 25 7. Wire bonder according to Claim 6, characterized in that the wire-clamp holder comprises a weakened preferential bending section or leaf-spring section, which ensures the elastic deflectability and in which the strain gauge is located.

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8. Wire bonder according to claim 5,  
characterized in that within the program control system a  
control program for automatically carrying out the method  
according to one of the claims 1 to 3 is implemented.

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